20. (Amended) An ion source, which comprises:

a cluster production device, which is arranged for producing multiple neutral clusters and controlling the cluster size,

a cluster fragmentation device, which is arranged for loading the neutral clusters with at least one reaction partner and for fragmenting the loaded clusters into spatially separated cluster fragments with differing electrical charges, and

an acceleration device for accelerating the cluster fragments.

21. (Amended) The ion source according to claim 20 being arranged in an ion thruster, wherein the control and steering devices are arranged for the purpose of steering positively and negatively charged cluster fragments in different directions, and the acceleration device is arranged for polarity-dependent acceleration of the cluster fragments, so that the positive and negative cluster fragments are used for thrust production.

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Please add claims 22 –52 as follows

22. A method for cluster fragmentation comprising the steps:

producing a neutral cluster comprising a carrier substance,

loading said neutral cluster with at least one reaction partner, said reaction partner being chemically different from the carrier substance, said at least one reaction partner forming

at least one pair of electrically differently charged charge carriers with the carrier substance in the cluster, either spontaneously or excited from the outside, and fragmenting the cluster into a plurality of cluster fragments, such that at least one positively charged and at least one negatively charged cluster fragment is formed during the fragmentation,

and the at least one reaction partner is part of at least one cluster fragment after the fragmentation, and the cluster fragments are spatially separated.

23. The method according to claim 22, further comprising the step of loading the cluster with an electrically neutral molecule.

24. The method according to claim 23, wherein, said step of loading the cluster with an electrically neutral molecule comprises the steps of applying neutral molecules as an adsorbate coating to a solid body surface, and

transferring said neutral molecules from the solid body surface into the charged cluster fragments.

25. The method according to claim 22, wherein the cluster fragmentation occurs through collision of the cluster with a moving or static boundary surface or through direct energy input.

26. The method according to claim 22, wherein the loading with the reaction partner occurs by at least one method, either alone or in combination, selected from the group consisting of; loading during the cluster production, loading during the cluster movement toward a boundary surface by interaction with at least one gas phase particle of the reaction partner, and loading during the collision with a boundary surface by absorption of reaction partner adsorbates into the cluster.

27. The method according to claim 22, wherein polar molecules or molecule groups are used as the carrier substance.

28. The method according to claim 22, wherein an electron transfer occurs between the carrier material and the reaction partner.

29. The method of claim 28, wherein the reaction partner is a molecule or atom having low ionization energy.

30. The method of claim 29, wherein the reaction partner is an alkali atom.

31. The method according claim 22, wherein a proton transfer occurs between the carrier material and the reaction partner.

32. The method of claim 31, wherein the reaction partner is a strong acid and the carrier material is a strong base.

33. The method of claim 31, wherein the reaction partner is a strong base and the carrier material is a strong acid.

34. The method according to claim 22, wherein said step of production of said neutral cluster comprises at least one method, either alone or in combination, selected from the group consisting of; ultrasound expansion of a gas and ultrasound expansion of a gas mixture by means of a nozzle arrangement.

35. The method according to claim 34, wherein the clusters produced are subjected to geometric beam limiting for irradiating a boundary surface according to a predetermined pattern.

36. The method according to claim 22, further comprising the step of influencing kinetic energy of the charged cluster fragments by at least one method, either alone or in combination, selected from the group consisting of; subjecting the cluster fragments to an electrical field and subjecting the cluster fragments to a magnetic field, and

subjecting the cluster fragments to a further fragmentation.

37. The method according to claim 22, further comprising the step of subjecting the cluster fragments to a count, a mass spectroscopy examination, or a material analysis.

38. The method according to claim 22, wherein the fragmentation of the cluster occurs by glancing incidence of the cluster on a boundary surface.

39. The method according to claim 25, wherein the boundary surface is a gas phase/liquid or gas phase/solid body boundary surface.

40. The method according to claim 39, wherein the boundary surface is formed by a solid body surface made of a metal, a semiconductor, or a dielectric.

41. The method according to claim 39, wherein the boundary surface is coated with reaction partner adsorbates with a surface density whose temporal average has a predetermined value.

42. The method according to claim 26, wherein the boundary surface is a gas phase/liquid or gas phase/solid body boundary surface.

43. The method according to claim 42, wherein the boundary surface is formed by a solid body surface made of a metal, a semiconductor, or a dielectric.

44. The method according to claim 42, wherein the boundary surface is coated with reaction partner adsorbates with a surface density whose temporal average has a predetermined value.

45. The method according to claim 35, wherein the boundary surface is a gas phase/liquid or gas phase/solid body boundary surface.

46. The method according to claim 45, wherein the boundary surface is formed by a solid body surface made of a metal, a semiconductor, or a dielectric.

47. The method according to claim 45, wherein the boundary surface is coated with reaction partner adsorbates with a surface density whose temporal average has a predetermined value.

48. The method according to claim 38, wherein the boundary surface is a gas phase/liquid or gas phase/solid body boundary surface.

49. The method according to claim 48, wherein the boundary surface is formed by a solid body surface made of a metal, a semiconductor, or a dielectric.

50. The method according to claim 48, wherein the boundary surface is coated with reaction partner adsorbates with a surface density whose temporal average has a predetermined value.

51. The method according to claim 22, wherein the carrier substance comprises a chemical compound which has such a low electron affinity that electrons are not stably bonded to a cluster fragment.

52. Method according to claim 22, said method being used:

for absorbing surface adsorbates from a surface which are to be subjected to an analysis,

for absorbing impurities from solid body surfaces for their purification, or

for producing charged cluster fragments from clusters and aerosols which are to be subjected to a charge measurement or mass spectrometry analysis.

REMARKS

The amendments presented here are made on the basis of the claims as amended during PCT Chapter II procedure. Claims 1-18 have been canceled and replaced with new claims 22 –52. New claims 22 –52 recite the same subject matter as original claims 1 –18. The new claims have simply been added to remove multiple dependencies and to conform with U.S.